

is often very prompt, sometimes dramatically so as the following instance illustrates: A teamster, 21 years old, came to our wards having had urethritis one month and very severe pain in both knees for four days.

Examination showed that both knee joints contained much fluid, were very painful and so exquisitely tender that the slightest jar caused the patient to wince pitifully. One knee joint was aspirated and 40 cubic centimeters of turbid fluid was withdrawn in which gonococci were easily demonstrated.

The next morning the relief following the removal of the fluid had gone, the aspirated joint was as tense as before, both knees being greatly distended with fluid and causing as much suffering as ever. Salicylates in large doses had had no effect and were discontinued. Ten million dead gonococci were given subcutaneously in the arm and the interne instructed to withdraw the fluid from both knee joints the following morning if the condition was no better. This, however, proved to be unnecessary. By the end of twenty-four hours the clinical picture was entirely changed. The pain and tenderness had gone and the joints instead of being hot, hard and tense were cool and relaxed, the fluid having greatly receded. By the end of six days the fluid was still demonstrable but the patient was walking about the ward. He was given ten million more dead gonococci and within a few days no exudation in the joints could be detected. Recovery was considered complete in 16 days after the first injection.

MAJOR EMERGENCY OPERATIONS WITH REFERENCE TO FRACTURE OF THE SKULL AND WOUNDS OF THE ABDOMEN.*

By WALLACE I. TERRY, M. D., San Francisco.

During the year Sept. 26, 1907, to Sept. 26, 1908, I have performed 45 major emergency operations at the Central Emergency Hospital, and it is my privilege to make some report of the cases to this society. As the total number of cases treated at the Emergency Hospitals during that time was approximately 20,000, it is to be understood that the 45 cases represented only the urgent major surgical conditions.

The cases may be roughly grouped into five classes, viz: 1. Acute Appendicitis; 2. Strangulated Hernia; 3. Severe Injuries of the Extremities; 4. Fractures of the Skull; 5. Wounds of the Abdomen.

There were two cases of acute appendicitis, both of which recovered.

Of the four cases of strangulated hernia one died—a man aged 69 years in poor physical condition with a very large scrotal hernia which had been irreducible for two days. At the operation a large coil of small intestine was found in the sac—no gangrene—intestine was reduced and hernial opening closed. Patient died quite suddenly four hours afterwards.

* Read before the San Francisco County Medical Society.

There were ten cases of severe injuries of the extremities demanding immediate operation. Of these three patients died—a crush of the arm requiring amputation died after sixteen days from septicemia—a crush of both thighs requiring double amputation died in twenty-four hours from shock—a crush of one thigh requiring amputation died three days later with gangrene of the stump. Of the seven patients who recovered five required major amputations and two were conservatively treated.

Fracture of the skull furnished sixteen cases of which ten died. This mortality rate seems unusually high, but in explanation I would state that operations were only performed when imperative, the far greater proportion of such cases having been attended by their own physician. As a consequence the operated cases were of the most severe type and in a number of them operation was done with little expectation of a favorable outcome. The gravity of these cases is further shown by the fact that in all the fatal ones a basal fracture was present, as demonstrated at the operation or by autopsy. In several instances the middle meningeal artery was ruptured at the foramen spinosum. The average duration of life after operation in the ten fatal cases was forty hours, one patient having survived six days. Of the six cases which recovered two had ruptures of the superior longitudinal sinus.

A few words in regard to diagnosis may not be amiss. The differential diagnosis between acute alcoholism and fracture of the skull has been and is still a matter of great difficulty in a small proportion of cases. Where the two conditions coexist only careful observation over a considerable number of hours will enable one to arrive at a correct diagnosis. Blame should not too lightly be put on the emergency surgeons for an error in diagnosis when the period of observation is short and the difficulties of the case are considered. Lumbar puncture is of much value in some of the doubtful cases but too much weight should not be laid on it, as blood cells may not be present in the spinal fluid in a real case of skull fracture or on the other hand blood may be present as the result of puncturing a vessel. It should not be omitted, however, in suspicious cases. A study of the eye reflexes and of the fundus is often of great value. It should be remembered, however, that pupillary changes are often rapid and apparently contradictory in many of the borderline cases—at one moment we may find marked dilation of one pupil and soon afterwards both pupils may be equal and responsive to light.

In this connection I desire to mention that in two cases I have observed an irregular dilation of one pupil which later became regularly dilated showing that it was probably not due to an old syphilitic iritis nor to synechia. As the observations were brief and the history relative to any antecedent eye trouble not obtainable, I do not attach any special importance to them. Examinations of the fundus should be made by one thoroughly familiar with the normal and pathologic appearances, for the determination of beginning changes requires much practice. Suggillations, especially in the re-

gion of the mastoid, are suggestive of basal fractures, but may appear too late to be of diagnostic importance. More often hemorrhages or the flow of cerebro-spinal fluid from the nasopharynx or ears will give positive indications of skull injury, provided of course that purely local causes for the hemorrhages can be excluded.

So far as treatment is concerned there is little new to be said, except as regards Harvey Cushing's subtemporal decompression in basal fractures and the administration of hexamethylenamina. The idea of giving the brain an opportunity to expand and the extravasated blood or serum to drain away before the respiratory or other vital centers are fatally compressed seems rational, and Cushing's method is simple, easy of performance and will, in my opinion, be followed by a fair proportion of recoveries in what would ordinarily be considered hopeless cases. A straight incision in the direction of the fibers of the temporal muscle with splitting of the muscle permits ready access to the temporal and sphenoid bones and after decompression and drainage the temporal muscle protects the skull defect. Should the pathological findings on one side be insufficient to account for the symptoms, one should not hesitate to make a subtemporal opening on the other side. In his recent paper (*Annals of Surgery*—May, '08), Cushing reports 13 recoveries in 15 cases of basal fracture treated by this method.

The use of hexamethylenamina, after fractures of the skull to prevent meningitis has been advocated by Cushing following the discovery by Crowe that formaldehyde, one of its constituents, is found in the cerebro-spinal fluid soon after its administration. It should be given in large doses where we have reason to fear infection of the meninges.

There were thirteen abdominal wounds in this series of cases and of these ten were gunshot, one a stab wound, one a crush of the intestines and one a spontaneous rupture of the rectum. Nine cases terminated fatally after periods varying from a few hours to seven months. The organs involved in the fatal cases included the lungs, diaphragm, liver, stomach, pancreas, small and large intestine and the spinal cord, while in the four recoveries, the lungs, diaphragm, liver, stomach, large intestine and bladder were involved.

One gunshot case is sufficiently unusual to justify separate comment.

Mr. M. was shot in the abdomen with a small caliber bullet at midnight Feb. 10, 1908. The wound of entrance was at the outer border of the left rectus muscle at the costal margin—no wound of exit, but a prominence in the left triangle of Petit. Marked shock, rigid abdominal walls, bloody vomitus and the direction of the wound made the diagnosis of perforation of the stomach quite certain. At the operation which was performed about two hours after the injury, both the anterior and posterior walls of the stomach were found to be perforated and also the tail of the pancreas. The stomach wounds were sutured and the lesser peritoneal sac and pancreatic wound drained through a posterior incision just below the left kidney. The patient then came under the care of Dr. Emmet Rixford and apparently recovered after the first few weeks, except for a fistulous opening at the wound entrance.

This fistula persisted up to the time of his death seven months after the original operation.

At the autopsy by Coroner's Physician John R. Clark, to whom I wish to express my appreciation for the report of this and other cases, a general peritonitis with multiple abscesses of the liver was found. It is my belief that the pancreatic wound was the principal factor in the production of the late peritonitis though the condition of the organs was such that this point could not be determined at autopsy.

A case of subcutaneous rupture of the intestines is also of interest. Mr. D., a carpenter, fell from a ladder about 20 feet, landing on his back. A heavy panel fell on top of him, striking edgewise on the left side, of the abdomen. The skin was not broken but the abdominal muscles were ruptured on the left side. At operation it was found that a loop of small intestine was cut across in two places about two feet apart up to the root of the mesentery. The descending colon and sigmoid were stripped from their mesentery but not ruptured. Much fecal matter and blood in the abdomen. An excision of that portion of the small intestine between the two ruptures followed by an end to end anastomosis was rapidly done and the descending colon brought out of the wound. Death in twenty-four hours. At autopsy besides the above mentioned injuries the psoas and iliacus muscles were found to be pulped and the left ureter crushed.

A case of rectal perforation presented simply the picture of a general peritonitis with a history of having been sick for two days. At operation a perforation of the anterior wall of the rectum nearly $\frac{1}{2}$ " in diameter was found. The presence of cicatrices in the descending and sigmoid colon make it probable that an old dysentery or lues was responsible for the perforation.

As regards gunshot wounds of the abdomen the consensus of opinion favors immediate operative intervention when the wound has been produced by a bullet of large caliber traveling at a comparatively low velocity. The opposite rule prevails in military life where the bullet is small, has a hard jacket and the initial velocity is high, for in many instances, as shown by the records of recent wars, the visceral perforations close spontaneously and there is scarcely any soiling of the peritoneal cavity. In civil life the wounds are ragged, fragments of clothing and skin are carried in deeply and the contents of hollow viscera are more apt to leak into the peritoneal cavity.

In gunshot wounds of the stomach, the prognosis is materially influenced by the character of the contents of that organ. In a fasting state the gastric secretion is relatively sterile, but when, as often happens in civil life, the patient has eaten mixed foods poorly chewed and washed down with alcoholic beverages, the insult to the peritoneum is great.

The question of irrigation of the peritoneal cavity in the presence of extravasated intestinal contents is still debatable. There are many surgeons who insist that a dry toilet of the peritoneum is the better method, while some of the advocates of thorough irrigation have recently stated their convictions. Blake of New York seems to obtain as good results by washing the peritoneal cavity with normal salt solution, as do those who follow the opposite method. Personally I am yet unable to decide to my own satisfaction which is the better method.

Discussion.

Dr. Hobdy: In the matter of peritoneal toilet I am firmly convinced of the efficacy of the wet method, not only washing out thoroughly, but after making the peritoneal toilet as thoroughly as possible, leaving in a certain amount of fluid in the peritoneal cavity. The cases which I have seen under this treatment, have shown better results than when an attempt has been made to clean a soiled peritoneum by the dry method.

Dr. Barbat: One thing which has attracted my attention in injuries to the head is the disproportion between the symptoms and the amount of injury to the brain. I have seen several of these cases recently. In the case of a patient who had been hit by a street car, there were seven consultants, none of whom would venture an opinion as to the locality or extent of the brain lesion, but we decided to explore and find out. An opening was made over the site of injury and a linear fracture of the skull found extending from a little above the top of the ear to the base of the skull. On opening the skull the whole temporosphenoidal lobe was found to be pulvified, due to the rupture of a branch of the middle cerebral artery. Several hours before operation this man was able to get up on his elbow and ask for the urinal, and was apparently perfectly rational. I have noticed in several cases that individuals have been able to converse rationally with large amounts of brain tissue destroyed. We have a great deal to learn before we will be able to diagnose correctly whether a patient has an extradural or subdural hemorrhage, or is suffering from a destruction of brain tissue due to intracerebral hemorrhage.

Dr. Somers: I was very glad to hear this paper by Dr. Terry on the subject of fractures of the skull and other cases that come under the observation of an emergency surgeon. Of the various groups of cases that come under observation in emergency work it appears to me that these cases of fracture of the skull are the most interesting. A man that is dealing with this class of cases is constantly bumping up against the question as to whether a man is merely drunk or dying from some more serious condition. I notice that Dr. Terry spoke with some little feeling about the difficulties of diagnosis in this class of cases. Where emergency work is not well organized, cases of this sort are constantly slipping through the fingers of the emergency surgeon to the great joy of the newspapers. I have not noticed anything recently in regard to "drunk or dying" cases, but a few years ago a great many such seemed to come before our notice. Often the only way that we can make a diagnosis is to keep the cases under observation for a number of hours, or even days, perhaps, and the only way that the service can prevent the slipping through of these is to realize and insist upon the fact that a man who is drunk is suffering from a poison; that he is poisoned and as such is properly in the hands of the medical profession and should not be turned over to the police until he is sober. As regards the procedure where diagnosis of fracture of the skull is made, I believe that as soon as that diagnosis is made an operation should be performed,—the skull should be trephined. The necessity of trephining is well illustrated by a case which I remember of a small boy who fell down the second story of a building and whom I saw a few hours after he fell. He had regained consciousness but for several days did not attain complete mental equilibrium. After careful study it seemed to me that he was suffering from a fractured skull. This case fell into my hands after I had had my experience in emergency work and following the routine of my experience, I advised operation. A linear fracture across the parietal bone was found without any depression or separation. However, there seemed to be considerable oozing from that line and upon trephining, I found very distinctly, a

portion of the dura mater caught up between the two fragments of bone. In other words, when the child fell, the bone was fractured, the parts separated, the dura mater came between and was caught there. By a simple opening the dura mater was liberated and the child recovered. These two points in reference to skull cases, I would emphasize, viz.—where alcoholism is a complicating symptom, that case must be kept under observation whether the lesions are found or not, and secondly, the necessity of trephining wherever a case of fracture is diagnosed, for there is always the danger of pinching the dura mater even in a linear fracture.

UROPHERIN-S.

Uropherin-S, $\text{LiC}_7\text{H}_7\text{N}_2\text{O}_2 + \text{LiC}_7\text{H}_5\text{O}_8$, is a double salt of theobromine-lithium and lithium salicylate.

Actions and Uses.—The properties, actions, uses and dosage of this compound are practically the same as those of "theobromine-lithium benzoate" (see Uropherin-B). Manufactured by E. Merck, Darmstadt (Merck & Co., New York).

UROTROPINE.

A name applied to Hexamethylenamina, U. S. P.

UROTROPINE—NEW.

A name applied to Hexamethylenamine Methylenecitrate (which see). Manufactured by Chemische Fabrik auf Actien, vorm. E. Schering, Berlin (Schering & Glatz, New York).

VALYL.

Valyl, $\text{C}_4\text{H}_9\text{CO.N(C}_2\text{H}_5)_2 = \text{C}_9\text{H}_{19}\text{ON}$, is a compound of valeric acid and diethylamine.

Actions and Uses.—Valyl acts as a sedative, antispasmodic and nervine, similar to valerian. Dosage.—Owing to the liability of valyl to oxidize when exposed to the air, it is supplied only in the form of gelatin capsules, each containing 0.125 Gm. (2 grains), the dose being 2 or 3 capsules, administered during or immediately after meals, or otherwise with a little milk. Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York).

HOME NURSING COURSE FOR WOMEN.

The nurses' auxiliary of the California branch of the American Red Cross has undertaken an exceedingly valuable work. A series of lectures have been arranged for housewives and women generally, intended to give the woman at home an idea as to the care of members of the family when taken sick, without in any way infringing upon the territory of the trained nurse. Miss Frances S. Hirschey, 449 Cole St., San Francisco, is the Secretary, and full information can be had from her upon application.

PHYSICIANS' MUTUAL AID ASSOCIATION.

This exceedingly valuable organization was started in California some few years ago, and has not met with the support which it really should. It provides assistance to physicians who are members in case of need and, on the assessment plan, pays a small death benefit. It is inexpensive to keep up, and it should receive a more hearty support from our members.

Write to Dr. J. E. Janes, Secretary, Pasadena, Cal., and find out about it.

UNIVERSITY COURSE IN HYGIENE.

The State University has established this year a course in hygiene at the Summer Session from June 21st to July 31st. The work is in charge of Dr. Ernest B. Hoag, Medical Director of the Pasadena City schools, and Margaret Henderson, assistant in bacteriology. There are courses on school hygiene, medical inspection in schools, elements in bacteriology and bacteriological diagnosis. The last two are from 9:00 to 12:00 in the morning, Monday, Tuesday, Wednesday, Thursday and Friday. The first is on the same days at 2:00 in the afternoon, and the second at 3:00 in the afternoon. These courses should be very attractive.